Aspects of early childhood: a fundamental stage for human development

Luiza Nadia Fanezi[1] iD Caroline Ottobelli Getellina[1] iD Adriana Rotoli[1] iD

[1]Universidade Regional Integrada do Alto Uruguai e das Missões – URI. Ijuí/RS, Brasil.
E-mail: luizanadia@hotmail.com

Abstract

The present study covers the maternal-infant care line. The present study analyzes the associations between changes in growth and development and their possible causes and was carried out from January to December 2019, in the municipality of Três Passos. This is a quantitative documentary study, using 160 medical records of children seen in childcare consultations. Regarding the childcare consultation aimed at children over 2 (two) years old, 157 (98.1%) weighed more than 9.0 (nine) kg. On the other hand, 160 (100%) did not report weight percentiles, and 157 (98.1%) had no length reported, and 158 (98.7%) had no percentile of length reported as well as the absence of age information. Thus, the children of the city of Três Passos presented aspects that are in line with early childhood development standards recommended for this group.

Keywords: Child. Health-disease process. Childcare.

INTRODUCTION

The phase referred to as the beginning of the cycle of life, childhood, is a period of mere acquisitions, and are elementary aspects for continuity in the other phases of life. Even so, this phase is considered a moment of fragility in which the child is adapting to the external environment, the extrauterine life, and is an opportunistic period for diseases that may alter the growth and physiological development during this phase[1].

Therefore, the period from 0 (zero) to 2 (two) years corresponds to early childhood, a period in which the Ministry of Health imbues us with knowledge so that we can systematically assess the growth milestones at each child's age[2].

No entanto, todas as alterações que envolvem período da infância, correspondem ao processo de transição, onde a maneira que a criança se desenvolveu neste período implicará nas demais etapas de sua infância, ou seja, é nesta fase que a criança adquire mecanismos que podem perdurar pelos demais ciclos de sua vida, como o ato de sucção para o processo de amamentação, assim, com o aleitamento materno terá um anticorpo natural prevenindo doenças futuras[3].

However, all the changes that involve the childhood period correspond to the transition process, where the way the child developed

in this period will imply in the other stages of his childhood, that is, it is at this stage that the child acquires mechanisms that can last. for the other cycles of their life, such as the act of sucking for the breastfeeding process, thus, with breastfeeding, they will have a natural antibody preventing future diseases[3].

The maternal and childcare line is considered an area which needs to be organized in a systematic way where the assistance developed for this group is capable of involving actions from health promotion to prevention, that is, in order to fully promote the growth and development potential of the child as well as involve health prevention behaviors to encompass the actions of prevention of diseases prevalent in childhood. Accompanying the child during this period is essential, although it is a commitment to a human being throughout their life cycle[2].

With regards to the evolution of childhood in a natural way, corresponding to the physiological process of the life cycle, there must be a periodic and systematic monitoring of child growth and development. Therefore, it is necessary to know the child growth and development assessment tool, that is, the childcare consultations[2]. This study aims to analyze the associations between growth and development and their possible causes.

METHODOLOGY

This is a quantitative and documentary study, which was carried out through the analysis of the medical records of 160 children attended in childcare consultations in the first and second semesters of 2019. The childcare consultation records held in the municipality of Três Passos were researched for the years 2017, 2018, and 2019. Regarding ethical precepts, the project was evaluated by the institution's Ethics Committee and had authorization from the municipal manager and the professional responsible for the childcare consultations.

Regarding the sample, it was composed of 160 records, including records of children from 0 (zero) to 2 (two) years old, and they were included in the inclusion and exclusion criteria.

With regards to data analysis, the variables were described using absolute and relative frequencies and compared using Pearson's chi-squared or Fisher's exact tests. The significance level adopted was 5% ($p<0.05$) and the data were analyzed using SPSS software (Statistical Package for the Social Sciences) version 21.0.

RESULTS

Table 1 shows information on Diseases and Illnesses that most affected children from 0 (zero) to 2 (two) years old and can interfere in the process of child growth and development.

During the assessment of child's growth and development, it was possible to carry out an epidemiological analysis seeking the frequency of diseases and conditions that most affected children from 0 (zero) to 2 (two) years old. About this analysis, 79 (49.4%) had a cough, but 74 (46.3%) had only one episode of this condition. It was also demonstrated that 117 (73.1%) grew within the expectations for their age, and they did not need to undergo a weight-related con-sultation (weight review).

On the other hand, maternal data were also identified in this analysis, and 141 (88.1%) of the mothers did not provide information regarding the use of Equilid®.

Regarding the diseases that affect children, 61 (38.1%) had Upper Airway Infections (URI) and 83 (51.9%) did not. It is also noteworthy that 141 (88.1%) did not report results related to the presence of jaundice and its classification, that is, this information was not included in the medical records, and in relation to the crosses (places of the body where jaundice was most evident) 142 (88.8%) also did not report them.

Table 1 – Information on diseases and conditions that most affected children from 0 (zero) to 2 (two) years old. Três Passos, Rio Grande do Sul, Brazil. 2020

Variables	n=160 (%)	Variables	n=160 (%)
Cough*		**Use of vitamin complex***	
Yes	79 (49.4)	Yes	29 (18.1)
More than one episode	7 (4.4)	No	89 (55.6)
No	74 (46.3)	Not applicable	42 (26.3)
Fever*		**Nasal obstruction***	
Yes	63 (39.4)	Yes	14 (8.8)
more than one episode	6 (3.8)	No	142 (88.8)
No	91 (56.9)	Not applicable	4 (2.5)
Weight reviewed*		Use of medication for upper respiratory tract infection*	43 (26.9)
Yes	38 (23.8)	Required to use antibiotic therapy*	29 (18.1)
No	117 (73.1)	Bronchitis*	17 (10.6)
Not applicable	5 (3.1)	Coryza*	23 (14.4)
Mother needed to use Equilid®*		Diarrhea*	15 (9.4)
Yes	8 (5.0)	Impetigo*	9 (5.6)
No	11 (6.9)	Anemia*	13 (8.1)
Not applicable	141 (88.1)	Obesity*	1 (0.6)
Upper Airway Infection (URI)*		Required referral to Hematologist*	4 (2.5)
Yes	61 (38.1)	Needed to repeat eye test*	0 (0.0)
No	83 (51.9)	Needed to repeat ear test*	3 (1.9)
Not applicable	16 (10.0)	Needed to use medication for worms*	3 (1.9)
Jaundice/classification*		Heart disease / Interventricular communication *	3 (1.9)
Pathological	11 (6.9)	Incomplete right ventricular branch block*	3 (1.9)
Physiological	8 (5.0)	Needed to perform an electrocardiogram*	7 (4.4)
Not applicable	141 (88.1)	Required to use medication with diuretic effect*	3 (1.9)
Jaundice*		Abdominal pain*	7 (4.4)
Up to navel	5 (3.1)	**Gastrointestinal Infection***	
Up to the knees	2 (1.3)	Yes	19 (11.9)
Up to the ankles and forearm	2 (1.3)	No	130 (81.3)
Up to the plantar and palmar region	1 (0.6)	Not applicable	11 (6.9)
Unclassifiable	8 (5.0)	**Acute otitis media (AOM)***	
Not applicable	142 (88.8)	Unilateral	19 (11.9)
Viral rash*		Bilateral	10 (6.3)
Yes	15 (9.4)	Did not present	131 (81.9)
No	138 (86.3)	Pneumonia*	6 (3.8)
Not applicable	7 (4.4)	Acute bacterial tonsillitis*	7 (4.4)
Vomit*		Reflux*	3 (1.9)
Yes	10 (6.3)	Stomatitis*	7 (4.4)
No	146 (91.3)	Vomit*	5 (3.1)
Not applicable	4 (2.5)	**Allergy***	
Otitis*		Egg protein	1 (0.6)
Unilateral	20 (12.5)	Unspecified	3 (1.9)
Bilateral	9 (5.6)		
Suppurated	4 (2.5)		
Not applicable	127 (79.4)		

to be continued...

...continuation - Table 1

Variables	n=160 (%)
Did not present	156 (97.5)
Sharp drop in weight gain curve*	13 (8.1)
Irritability*	8 (5.0)
Allergic edema*	3 (1.9)
Contact dermatitis*	5 (3.1)
Gastroenteritis*	2 (1.3)
Conjunctivitis*	
Rhinoconjunctivitis	3 (1.9)
Conjunctivitis	64 (40.0)
Did not present	93 (58.1)
Urinary tract infection*	3 (1.9)
Umbilical hernia*	1 (0.6)
Heart murmur*	5 (3.1)
Otalgia*	0 (0.0)
Gingivitis*	0 (0.0)
Laryngitis/Rhinopharyngitis*	
Laryngitis	4 (2.5)
Rhinopharyngitis	40 (25.0)
Did not present	116 (72.5)
Hand, foot, and mouth disease*	2 (1.3)
Needed to perform qualitative urine tests (QUT)*	6 (3.8)
Needed to carry out weight reviews*	19 (11.9)
Had oliguria *	3 (1.9)
Required chest x-ray*	4 (2.5)
Bronchitis*	7 (4.4)
Using ferrous sulfate*	13 (8.1)
Diabetes Mellitus*	1 (0.6)
Cleft lip*	20 (12.5)
Urinary tract infection*	7 (4.4)
Needed to perform ultrasound of the urinary tract*	3 (1.9)
Skin lesion*	9 (5.6)
Congenital syphilis*	1 (0.6)
Dehydration*	3 (1.9)
Oral injuries*	4 (2.5)
Glaucoma*	0 (0.0)
Candidiasis*	
Oral	3 (1.9)
Perineum	3 (1.9)

Variables	n=160 (%)
Vaginal	1 (0.6)
Not applicable	153 (95.6)
Worm*	0 (0.0)
Hydrocele*	2 (1.3)
Pulmonary hypertension*	1 (0.6)
Pulmonary hemorrhage*	1 (0.6)
Severe hyponatremia*	1 (0.6)
Arterial duct persistence*	2 (1.3)
Hypospadias Cryptorchidism*	1 (0.6)
Inguinal hernia*	3 (1.9)
Required referral to ophthalmologist*	1 (0.6)
Required to use non-invasive mechanical ventilation (NIV)*	2 (1.3)
Hyponatremia*	1 (0.6)
Hydrolysis*	2 (1.3)
Respiratory infection*	12 (7.5)
Hypothyroidism*	1 (0.6)
Change in the oral cavity*	3 (1.9)
Needed to use phototherapy*	8 (5.0)
Neonatal infection*	3 (1.9)
Bronchiolitis*	1 (0.6)
Tonsillitis*	1 (0.6)
Pulmonary infection *	2 (1.3)
Required referral for biopsy*	1 (0.6)
Facial rash*	2 (1.3)
Stomatitis*	4 (2.5)
Absence seizures*	1 (0.6)
Bulging fontanelles*	3 (1.9)
Referral for Computed Tomography of the Skull*	1 (0.6)
Use of medication to increase immunity*	1 (0.6)
Change in the heel prick test*	1 (0.6)
Hypokalemia*	1 (0.6)
Viral meningitis*	1 (0.6)
Mother HIV Positive*	1 (0.6)
Uses AZT*	1 (0.6)
Metabolic Acidosis*	1 (0.6)
ICU hospital admission*	1 (0.6)
Rhinitis*	1 (0.6)

Source: Research Data, 2019.
Note: *continuous variables (mean and absolute percentage)

Laryngitis affected 40 (25.0%) individuals, 116 (72.5%) developed rhinopharynx, and the data referring to candidiasis were not reported among 153 (95.6%).

Table 2 shows information regarding the results of the associations of diseases and conditions prevalent among underweight children.

Associating low birth weight with the variables under study, children with low birth weight had a significantly higher proportion of vitamin complex use (p=0.016), allergic edema (p=0.038), neonatal infection (p=0.038), and pulmonary infection (p=0.014) than children without low birth weight. Moreover, underweight children tended to have more weight-related consultations and use of ferrous sulfate (p=0.057 and p=0.053, respectively).

Table 3 shows information on child growth and development in the age group that corresponds to 2 years of age, a period that has fundamental characteristics for the end of the early childhood period.

Regarding the consultations aimed at children over 2 (two) years old, 157 (98.1%) had a weight above 9.0 (nine) kg; on the other hand, 160 (100%) did not report weight percentiles, 157 (98.1%) did not report body length, and 158 (98.7%) did report length percentiles, thus there is a lack of information for this age.

Furthermore, information regarding the eye test (photomotor reflex and red reflex) and primitive reflexes were analyzed. Concerning this analysis, 157 (98.11%) of the children presented adequate photomotor reflex and red reflex.

In this follow-up, 158 (98.7%) of the children developed within the expectations for the age group of two years old, spoke their own name, named objects as their own, recognized themselves in the mirror, and spoke their first sentences. Of the 160 (100%) children, the information regarding the use of diapers was not reported.

Table 2 – Associations of diseases and conditions with low weight. Três Passos, Rio Grande do Sul, 2019

Variables	Underweight	Not Underweight	P
Use of vitamin complex*			0.016
Yes	6 (31.6)	23 (16.5)	
No	13 (68.4)	75 (54.0)	
Not applicable	0 (0.0)	41 (29.5)	
Allergic edema*	2 (10.5)	1 (0.7)	0.038
Weight reviewed	5 (26.3)	14 (10.1)	0.057
Using ferrous sulfate*	4 (21.1)	9 (6.5)	0.053
Neonatal infection*	2 (10.5)	1 (0.7)	0.038

Source: Survey data, 2019.
Note: *continuous variables (mean absolute percentage)

Table 3 – Information corresponding to 2 years of age. Três Passos, Rio Grande do Sul, Brazil. 2019

Variables	n=160 (%)
Weight*	
From 8.0 kg to 9.0 kg	3 (1.9)
>9.0 kg	157 (98.1)
Weight percentile	
Not applicable	**160 (10)**
Length*	
From 70cm to 80cm	**1 (0.6)**
>80 cm	2 (1.3)
Not applicable	157 (98.1)
Length/age percentile*	
>= -2 and <= +2 z-scores: age-appropriate length	**1 (0.6)**
< -3 z-scores: length too low for age	1 (0.6)
Not applicable	158 (98.7)
Cephalic perimeter*	
From 40 to 50	**1 (0.6)**
Not applicable	159 (99.4)
Head circumference percentile	
Not applicable	160 (100)
Vision - Showed photomotor reflex and red reflex*	
Yes	3 (1.9)
Not applicable	157 (98.1)
Using a food supplement*	
Yes	1 (0.6)
Not applicable	159 (99.4)
Speaks their own name and names objects as their own, recognizes themselves in the mirror, speaks the first sentences*	
Yes	2 (1.3)
Not applicable	158 (98.7)
Use of diapers*	
Not applicable	160 (100)

Source: Survey data, 2019.
Note: *continuous variables (mean absolute percentage)

DISCUSSION

In this study, information on development, essential characteristics of childhood in the age group of two years old were included. Most children evaluated according to age and stage of development acquired a notion of permanent objects (even outside visual field, remain existing), could sit without support from the 7th month onwards, could crawl and react to people, crawl or walk with support, stand without support, walk alone (1 year to 1 year and a half), has visual acuity of an adult/babbles, could run or climb low steps, speak their first words children between 1 (one) to 2 (two) years old, and finally the number of diapers were not reported for most.

Therefore, Brasil[4] highlights that some of the milestones of growth and development comprises the child at 7 (seven) months sitting without support, at 6 (six) to 9 (nine) months crawling, between 6 (six) to 8 (eight) months the baby presents reactions to strange people, between 6 (six) months to 1 (one) year they walk alone, around 1 (one) year they have visual acuity of adults, between 1 (one) year and 6 months to 2 years old they can run and climb low steps, between 2 and 3 years old they can say their own name and name objects[4].

Moreover, information on the growth and development of children from 0 to 2 years of age in the city of Três Passos in their last consultation, it was found that those weighing greater than 9.0 kg prevailed, as well as the weight percentile not reported due to the lack of reported age in the last consultation, and the length, length percentile, head circumference, head circumference percentile, photomotor reflex and red reflex, use of food supplements, act of saying your own name and naming objects, recognizing themselves in the mirror and speaking their first sentences.

It is important to emphasize that the photomotor and red photo reflexes evaluated in children during at the first consultation is related to the eye exam. The eye exam is one of the stages of neonatal screening, and every baby born in Brazil is entitled to undergo the exams that make up this program free of charge, namely: foot test, eye exam, ear test, heart test, and tongue test[3]. The red reflex test, also known as the "eye exam" is an exam capable of identifying the presence of visual impairments such as retinopathy from prematurity. As in the present study, Rodrigues et al.[5] shows similar results, with 94.0% of the total number of children evaluated having normal eye reflex, with a red to reddish-orange color[5].

In the present study, the most prevalent disease in children aged 0 to 2 years was upper airway infections, rhinopharyngitis, and cough, which are diseases that affect the upper respiratory tract.

Similar data were found in the study by Maebara et al.[6] where respiratory problems were the most prevalent diseases in the assessed children, making up a total of 94.0%[6]. Regarding the development of jaundice, most children did not have it. This information is in line with the study by Rodrigues et al.[5] which portrays the benefits of children who were breastfed, one of them being the prevention of neonatal jaundice, which an association that may be related stimulating the maturation of liver enzymes for bilirubin metabolism[5].

When analyzing low birth weight with diseases and illnesses, a statistically relevant association was found between low birth weight and high use of vitamin complex, allergic edema, neonatal infections, and pulmonary infections. Moreover, underweight children tended to have greater weight-related consultations and use of ferrous sulfate.

Similar data were found in the study by Santos et al.[8], that of the total number of children evaluated, 15% of these were born premature, associating low birth weight with the immune system being more susceptible to the involvement of respiratory and pulmonary diseases such as hypoxia, hyaline membrane syndrome, hemorrhagic disease, intracranial hemorrhages, infections, and hypogligemia[7-8].

However, low birth weight is considered as less than 2.5 kg, and approximately 20% of newborns have low birth weight in the country[9]. In Brazil, through the evaluation of the Live Birth System (SINASC) it is possible to identify that between the years 1996 and 2011, the highest incidence of low birth weight was in the Southeast (8.4%) and Southern (8.0%) regions, and lowest incidence in the North (7.2%), Northeast (7.6%), and Central-Western (7.4%) regions[10].

Data that agree with the present study were found in the study by Santos *et al.*[8] which associated low birth weight of children with the mothers' unpreparedness regarding pregnancy and hospitalization. Of the total number of children treated, 90% were using antibiotics and had a delay in the child growth and development curve[9].

CONCLUSION

From the present study, it was possible to identify that the children of Três Passos, in the process of completing early childhood, presented a satisfactory epidemiological profile resulting in an age-appropriate growth and developmental milestones. Most children started their pediatric consultations in the age group of 0 to 2 months, the recommended age, because at this stage the child presents milestones of growth and development that are possible to evaluate and identify possible changes accordingly.

The children who had neonatal jaundice had only the physiological forms, because most children were breastfed, and breast milk allows for the maturation of liver cells resulting in a decrease in neonatal jaundice rates. Most of the problems presented by the children were respiratory disorders, laryngitis, pharyngitis, cough, and Upper Airway Infections. Of those children who were affected by these diseases, most took a vitamin complex and ferrous sulfate and needed further weight-related consultations.

Despite this data, most children showed full growth and a healthy development, and had contact with breast milk, which is information that impacts an epidemiological profile within these physiological parameters.

Author statement CRediT

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